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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/914,005	01/11/2002	Bernd Krause	WEB 0044 PA	7204

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EXAMINER	
MENON, KRISHNAN S	
ART UNIT	**PAPER NUMBER**
1723	

DATE MAILED: 05/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/914,005	KRAUSE ET AL.	
	Examiner	Art Unit	
	Krishnan S Menon	1723	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *16-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *16-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claims 16-34 are pending in the RCE

Claim Rejections - 35 USC § 102

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 16-21, 24-26, 29 and 34 rejected under 35 U.S.C. 102(a/e) as being anticipated by Kabumoto et al (US 5,723,510).

Claim 16: Kabumoto teaches a method of making a polymeric membrane (see abstract) comprising providing a mix of polymers, a fluid that dissolves or gels in the polymer in the range 0.05 to 4.5% (col 3 lines 50-57; col 4 lines 34-45 and 65-67), charging the polymer mix with a gas (col 3 lines 50-67), foaming the polymer mix at temperature above glass transition (240 C, which is above Tg of polyester - see examples) and cooling to stabilize (col 5 lines 19-27). Kabumoto does not explicitly teach the membrane as having open pore foam; however, open pore should be inherent, since the reference use the same process as that of the applicant. Under the principles of inherency, if a prior art device, in its normal and usual operation, would necessarily perform the method claimed, then the method claimed will be considered to be anticipated by the prior art device. When the prior art device is the same as a device described in the specification for carrying out the claimed method, it can be assumed

the device will inherently perform the claimed process. In re King, 801 F.2d 1324, 231 USPQ 136 (Fed. Cir. 1986)

Claims 17-20: the fluid is infiltrated or added during manufacture (col 4 lines 34-67: added during manufacture could mean added during any step of the manufacturing process); and comprises an organic liquid.

Claim 21: gas charged below Tg, and after shaping; foaming by increasing temperature above Tg: col 3 line 50 – col 5 line 45, examples.

Claims 24-26: charging gas is CO2, is saturated: col 3 line 58- col 4 line 10

Claim 29: polycarbonate: col 2 lines 8-14

Claim 34: Intended use: A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kabumoto et al (US 5,723,510).

Kabumoto teaches all the limitations of claim16. Claim 22 adds the further limitations of the polymer mix being charged with gas at a temperature above Tg and then foamed by reducing pressure, which is not explicitly taught by Kabumoto. However, this would be equivalent to the process as recited in applicant's claim 21 (see above for the rejection of claim 21). The specification (pages 3-4) defines them as equivalent. In this case, the prior art element:

(A) performs the identical function specified in the claim in substantially the same way, and produces substantially the same results as the corresponding element disclosed in the specification. Kemco Sales, Inc. v. Control Papers Co., 208 F.3d 1352, 54 USPQ2d 1308 (Fed. Cir. 2000)

(B) is not excluded by any explicit definition provided in the specification for an equivalent. A person of ordinary skill in the art would have recognized the interchangeability of the element shown in the prior art for the corresponding element disclosed in the specification. Caterpillar Inc. v. Deere & Co., 224 F.3d 1374, 56 USPQ2d 1305 (Fed. Cir. 2000); Al-Site Corp. v. VSI Int ' l, Inc., 174 F.3d 1308, 1316, 50 USPQ2d 1161, 1165 (Fed. Cir. 1999); Chiuminatta Concrete Concepts, Inc. v. Cardinal Indus. Inc., 145 F.3d 1303, 1309, 46 USPQ2d 1752, 1757 (Fed. Cir. 1998); Lockheed Aircraft Corp. v. United States , 193 USPQ 449, 461 (Ct. Cl. 1977); Data Line Corp. v. Micro Technologies, Inc., 813 F.2d 1196, 1 USPQ2d 2052 (Fed. Cir. 1987).

(C) is an equivalent of the claimed element. There are insubstantial differences between the prior art element and the corresponding element disclosed in the specification. IMS Technology, Inc. v. Haas Automation, Inc., 206 F.3d 1422, 1436, 54 USPQ2d 1129, 1138 (Fed. Cir. 2000); Warner-Jenkinson Co. v. Hilton Davis Chemical Co., 117 S. Ct. 1040, 41 USPQ2d 1865, 1875 (1997); Valmont Industries, Inc. v. Reinke Mfg. Co., 983 F.2d 1039, 25 USPQ2d 1451 (Fed. Cir. 1993). See also Caterpillar Inc. v. Deere & Co., 224 F.3d 1374, 56 USPQ2d 1305 (Fed. Cir. 2000) the prior art element is a structural equivalent of the corresponding element disclosed in the specification. In re Bond, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990). That is, the prior art element performs the function specified in the claim in substantially the same manner as the function is performed by the corresponding element described in the specification

2. Claims 16-27 and 29-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Klotzer et al (5,980,795) in view of Siggel et al (US 4,380,594).

Klotzer teaches a method of making a polymeric open pore membrane (col 3 lines 1-7) comprising providing a polymer (abstract), charging the polymer mix with a gas, foaming the polymer mix at temperature above glass transition, and cooling the polymer membrane after foaming (col 3 line 8 – col 4 line 41) as in claim 16.

Klotzer does not teach a fluid that dissolves or gels in the polymer from 0.05 to 4.5%. Siggel teaches adding about 1% of silicone oil in the process of making foam filaments by melt extrusion of polymers (col 2 lines 4-23). It would be obvious to one of

ordinary skill in the art at the time of invention to use the teaching of Siggel in the teaching of Klotzer to improve the process (spinning speeds, etc.), to have more homogeneous pores, and to have at least partially hollow filaments, as taught by Siggel (see col 1 lines 38-59).

Claims 17-20, 23-25 and 31 add further limitations which Klotzer in view of Siggel teaches as follows: The fluid is infiltrated in the polymer as in claim 17, and is added to the polymer during manufacture as in claim 18, fluid is a gas or a liquid as in claim 19 (Siggel abstract), organic liquid as in claim 20 (Siggel abstract). The gas is charged after heating above the glass transition temperature and then extruded to foam the polymer as in claim 23 (Klotzer col 3 lines 8-15). The gas is carbon dioxide as in claims 24 and 25 (col 3 lines 1-5). Hollow fiber membrane as in claim 31 (Klotzer abstract).

Claims 21, 22, 26, 27, 29, 30, 32, 33 and 34 add further limitations, which Klotzer teaches, as follows: the polymer being charged with gas below the glass transition temperature and foamed above the glass transition temperature in claim 21(col 4 lines 19-40), polymer charged after shaping gas at below the glass transition temperature in claim 22 (col 3 lines 51-57), and the polymer is saturated with gas in claim 26 (col 4 lines 29-31), claim 29 adds polymer material like polysulfone, cellulose etc (col 3 lines 64-67) and cellulose acetate (col 1 lines 39-41), hollow surface fiber membrane in claim 30, which is asymmetric in claim 32 and 33 (col 3 lines 50-63), and use as a filtration membrane as in claim 34 (col 4 lines 4-12; also intended use - *Ex parte Masham*). Regarding claim 27, Siggel in view of Klotzer does not specifically state temperature between 100 and 200 C. However, Klotzer teaches temperature above glass transition

temperature. It would be obvious to one of ordinary skill in the art at the time of invention that the glass transition temperature would depend on the polymer or the polymer mix selected and could be between 100 and 200C depending on the polymer or polymer mix. [glass transition temperature of polysulfone at 190C: ref: www.boedeker.com/udel_p.htm].

3. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Klotzer (795) in view of Siggel (594) as applied to claim 16 above, and further in view of Malon et al (US 5,013,767).

Klotzer in view of Siggel does not teach the solvents of the instant claim. Malon teaches 1-methyl 2-pyrrolidone, dichloroethane and other solvents for melt-extruded hollow fibers (col 14 lines 35-40, col 12 lines 34-36). It would be obvious to one of ordinary skill in the art at the time of invention to use the solvent for polysulfone as taught by Malon in the teaching of Klotzer in view of Siggel for making asymmetric gas separation membranes.

Response to Arguments

Applicant's arguments filed 2/23/04 have been fully considered but they are not persuasive.

In response to Applicant's arguments that examiner pointed out that 'porous membrane' was not clear in the applicant's claims: In the prior office action, Examiner pointed out that majority of the claims including the base claim did not recite "porous

membrane" and that porous membrane was claimed only in claims 32-34 to show that applicant's reasons as to why the references could not be combined was not relevant for all claims 16-31. Examiner also had pointed out how the references would be combined by one of ordinary skill in the art to make asymmetric membranes as claimed in claims 32-34.

In response to applicant's argument, "In contrast, the membrane of the present invention comprises a continuous hollow cavity and the wall surrounding the cavity is porous. See the specification at page 2, lines 1-4 and page 6, lines 6-8", please note that there are no such limitations in the claims other than the product claims 31 and 33.

In response to applicant's argument that silicone oil do not dissolve or swell polymers, especially, polyethylene terephthalate (PET) and polyamide, please see Siggel col 7 lines 19-30, wherein the polymer melt is described as "homogenized mix" and "dissolved in", and the melt in question pertains to the cited polymers (see examples), which constitute factual evidence from the reference. If the applicant believes that this reference is in error, applicant is encouraged to provide factual evidence to that fact. Also please note that it is not necessary to copy exactly everything the references teach to establish a prima facie case of obviousness. The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

In the case of a hollow fiber forming polymer other than what Siggel ref teaches, one may use a different solvent as taught by the Malon ref. In response to the applicant's argument that silicone oil has a different intended use in the Siggel ref: The fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art also cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

Rest of the arguments have already been addressed in the rejection and/or are moot because of the new grounds for rejections.

Conclusion

This is a first action after an RCE, and is made non-final.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krishnan S Menon whose telephone number is 571-272-1143. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L Walker can be reached on 571-272-1151. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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